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MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow
Forecasts as of
February 1, 1982

UNITED STATES DEPARTMENT OF AGRICULTURE
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SNOTEL to give more data

New equipment that will determine the daily maximum, minimum, and average temperature is being installed at some SNOTEL sites in Montana. This new equipment is capable of transmitting data from isotopic snow and soil moisture gages and should reduce some maintenance problems.

Four key high elevation locations, three sites with isotopic equipment, and two sites where special data is being collected, are scheduled to receive this new equipment. As funds become available for replacement, additional sites will be retrofitted with this new generation electronics.

One additional site is scheduled for installation this spring. It will bring the total number of active SNOTEL sites in Montana to 65.

Persons interested in obtaining data from SNOTEL or having questions about this telemetry system should feel free to contact the SCS.

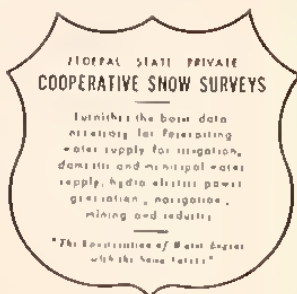
Statewide snowpack

Water content doubles during January

THE MONTANA WATER SUPPLY OUTLOOK IS A PUBLICATION OF THE U.S. SOIL CONSERVATION SERVICE. THE SCS ADMINISTERS THE COOPERATIVE SNOW SURVEY PROGRAM IN COOPERATION WITH OTHER FEDERAL, STATE, AND PRIVATE AGENCIES, ORGANIZATIONS, AND INDIVIDUALS.

THE REPORT IS PREPARED BY SCS, SNOW SURVEY AND WATER SUPPLY FORECAST UNIT, P. O. BOX 98, BOZEMAN, MONTANA.

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January was a good snowfall month over most of Montana. In many locations, the amount of water stored in the mountain snowpack is nearly double that measured on January 1. Frequent storms and cool temperatures have also contributed to a substantial snow accumulation in many valley areas. The mountain snowpack is less dense than normal causing many oversnow travelers to comment on the amount of "deep powder snow." The effects of wind also seem to be more prevalent this year.

Most of the state's mountain watersheds have near average amounts of water stored in the snowpack but there are some areas below and above average.

The below average areas are the northwest corner of the state, the Bearpaw and Highwood Mountains in

north central Montana, a small area in the Red Rock River drainage and parts of the Yellowstone River drainage. Above average snow areas are the Yellowstone River headwaters and the Bitterroot River and its adjacent drainages.

Generally, about two-thirds of the seasonal snow accumulation is in place by February 1. With nearly one-third of the snow season left, some changes can occur, particularly if the remaining months continue to produce above average snowfall.

In most areas, the soils under the snowpack are drier than usual and some of the snowmelt water will be required to fill the soil mantle before runoff begins. Next month, nearly all of the snow courses will be measured to obtain a complete inventory of this year's snow resource.

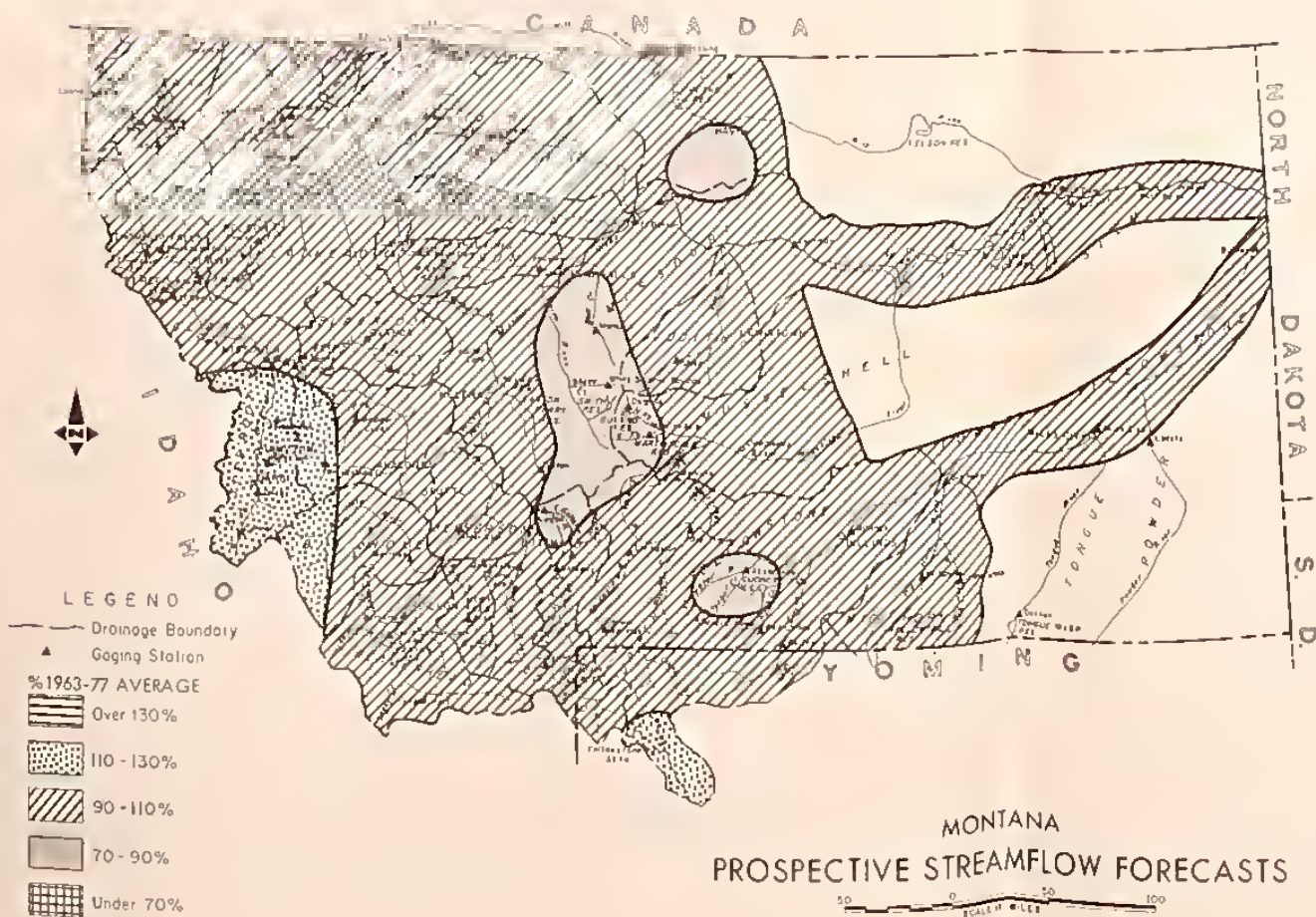
Statewide streamflow to be near average

With a few exceptions, most of the state can expect near average runoff this spring and summer.

Above average runoff is expected in the Bitterroot River and adjacent Rock Creek, the extreme headwaters of the Big Hole River and the Yellowstone Lake area.

The areas with below average runoff are portions of the Stillwater River and Rock Creek in the Yellowstone River drainage, small streams in central Montana, and Beaver Creek in the Bearpaw Mountains.

The mountain snowpack is much better than in recent years and should help sustain streamflows well into the main irrigation season.



Missouri River & Hudson Bay Drainages

STREAMFLOW FORECASTS

BASIN, STREAM MILE, FORECAST POINT	PERIOD	THIS YEAR		PAST RECORD		FORECAST		THOUSAND ACRES	
		1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
RED ROCK RIVER near Monida (1)	102	93	88.4	110	96.0	93	89.2	103	
BEAVERHEAD RIVER near Grant (2)	170	99	133	171	146	99	131	148	
BEAVERHEAD RIVER at Barratts (2)	215	95		226	187	95		196	
RUBY RIVER near Alder	104	99		105	88.0	99		89.0	
BIG HOLE RIVER near Melrose	860	109		792	800	110		730	
BOULDER RIVER near Boulder	93.0	90		103	87.0	90		96.7	
WILLOW CREEK near Harrison	20.2	94		21.5	18.3	95		19.2	
MADISON RIVER near Grayling (3)	486	93	405	523	382	93	320	409	
MADISON RIVER near McAllister (4)	850	95	716	892	676	96	602	706	
GALLATIN RIVER near Gateway	527	92		572	456	93		488	
INFLW MIDDLE CREEK RESERVOIR near Bozeman (5)	27.8	92		30.3	24.0	92		26.2	
HYALITE CREEK near Bozeman (6)	42.6	90		47.4	37.3	91		41.0	
GALLATIN RIVER at Logan	555	86		649	481	86		557	
MISSOURI RIVER at Toston (7)	2655	99	2817	2,671	2309	99	2619	2,330	
SNEE CREEK near White Sulphur Springs	20.0	88		22.8	17.5	88		19.8	
SUN RIVER at Gibson Dam (8)	565	97	498	580	520	98	457	529	
BELT CREEK near Monarch	127	87		146	116	87		134	
MISSOURI RIVER at Fort Benton (9)	4147	100		4,148	3635	100		3,640	
TWO MEDICINE CREEK near Browning (10)	238	92		259	226	93		244	
BADGER CREEK near Browning	120	90		133	104	90		116	
MARIAS RIVER near Shelby	535	93	432	577	500	94	408	532	
MISSOURI RIVER at Virgelle (11)	4780	100		4,793	4240	100		4,238	
MISSOURI RIVER near Landusky (11)	5323	102		5,214	4675	102		4,586	
NORTH FORK MUSSELSHELL RIVER near Delphine	5.7	89		6.4	4.9	89		5.5	
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	53.0	86		61.5	50.0	87		57.6	
MISSOURI RIVER below Fort Peck Dam (11)	5027	102		4,929	4468	102		4,381	
MILK RIVER at Eastern Crossing	275*	99		111*					
MILK RIVER at Eastern Crossing (12)	108*	98							
INFLW LAKE SAKAWA, ND (11)	13315	99		13,450	12110	99		12,239	
SASKATCHEWAN RIVER BASIN									
SWIFT CURRENT CREEK at Sherburne (13)	121	92	121	132	107	93	109	115	
ST. MARY'S RIVER near Babb (13)	472	96		498	410	96		426	

*For period March through September

- Adjusted for storage in Lima Reservoir.
- Adjusted for storage in Lima and Clark Canyon Reservoirs.
- Adjusted for storage in Hebgen Lake.
- Adjusted for storage in Hebgen Lake and Ennis Lake.
- Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.
- Adjusted for storage in Middle Creek Reservoir.
- Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.
- Adjusted for storage in Gibson Reservoir & diversions.
- Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Pishkun, Willow Creek & Canyon Ferry Reservoirs.
- Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
- Adjusted for all upstream reservoirs.
- Flow at Eastern Crossing minus St. Mary's Canal.
- Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

SUMMARY OF SNOW MEASUREMENTS

RIVER BASIN AND SUBWATERSHED	Number of Gauging Stations	THIS YEAR'S SNOW WATER EQUIVALENT	
		1963-64	1964-65
Beaverhead	11	172	105
Ruby	3	198	108
Big Hole	7	200	117
Boulder	12	190	95
Jefferson	33	187	106
Madison	18	201	109
Gallatin	14	203	91
Missouri Headwater	65	195	103
West-side Missouri (Toston-Cascade)	8	170	93
Smith	5	175	100
Belt-Arrow	3	199	96
Missouri Main-stem	16	177	96
Teton & Sun	4	258	94
Marias	3	201	106
Marias-Teton-Sun	7	221	101
Judith	5	175	100
Musselshell	5	175	100
Judith-Musselshell	10	175	100
Milk	7	262	103
Bear Paws	6	281	85
Missouri (Total)	98	193	102
Saskatchewan			
St. Mary's	2	140	96
Bow River in Alberta	5	70	79



Streamflow levels near average

The major portions of the Missouri River drainage are forecast to have near average streamflow during the spring and summer months. Flows should hold up well into the irrigation season in most streams.

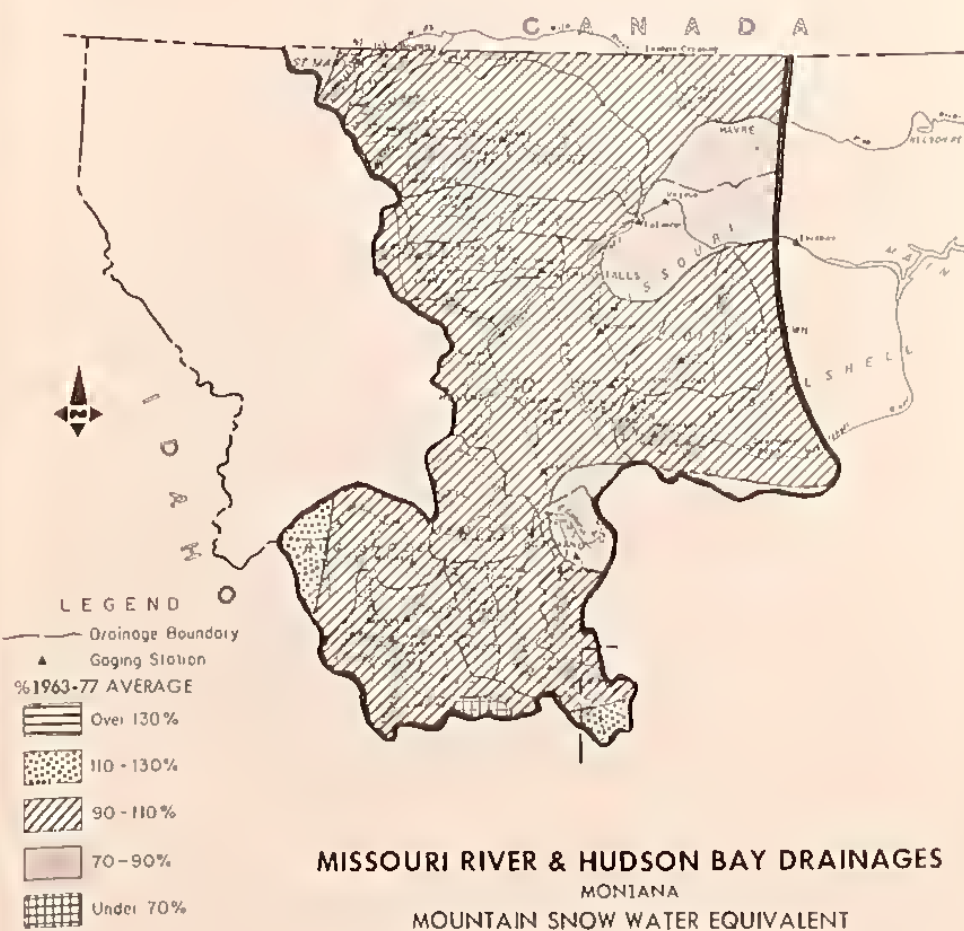
Some areas in central Montana are currently forecast to have streamflows a little below average, but many of these have some stored water to supplement late season irrigation supplies.

Depending on climatic and soil conditions, some runoff may be generated from valley areas when temperatures moderate.

Most irrigation and multipurpose reservoirs have near average storage levels and should fill with spring runoff.

WATER SUPPLY OUTLOOK

STREAM & AREA	Flow Period	
	Spring Season	Long Season
Beaverhead	Avg	Avg
Ruby	Avg	Avg
Big Hole	Exc	Avg
Boulder	Avg	Avg
Jefferson	Avg	Avg
Madison	Avg	Avg
Gallatin	Avg	Avg
West-Side Missouri	Avg	Avg
Smith-Belt	Avg	Avg
Sun	Avg	Avg
Teton	Avg	Avg
Marias	Avg	Avg
Judith	Avg	Avg
Musselshell	Avg	Avg
Milk	Exc	Avg
Bear Paws	Avg	Fair
St. Mary's	Avg	Avg



MISSOURI RIVER & HUDSON BAY DRAINAGES
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

SNOW SURVEY DATA

SNOW FEBRUARY 1982

DRAINAGE BASIN AND SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Year Observed	Water Content (Percent)	Year Observed	Water Content (Percent)
ARCH FALLS	7350	1/26	32	7.8	2.0	0.1
ASHLEY DIVIDE	4820	1/29	32	7.0	1.4	-
ASHLEY LAKE	4000	1/29	27	5.6	1.8	-
BADGER PASS	6900	2/03	104	23.0A	17.0	29.5
BADGER PASS PILLW	6900	2/01	SP	24.6	15.0	-
BAINFIELD MOUNTAIN	5600	1/25	53	15.4	10.6	18.2
BAINFIELD MOUNTAIN PILLW	5600	1/25	SP	13.7	10.5	15.2
BARKER LAKES PILLW	8250	2/01	SP	10.3	7.7	-
HASIN CREEK	7180	1/28	33	8.0	4.2	-
HASIN CREEK PILLW	7150	2/01	SP	6.3	4.5	-
BEAGLE SPRINGS PILLW	8550	2/01	SP	6.9	2.4	-
BEAR PAW SKI AREA	5200	1/27	19	3.4	0.6	4.6
BLACK HEAR	7950	1/28	104	35.6	16.8	27.4
BLACK HEAR PILLW	7950	1/28	SP	30.8	16.2	25.0
BLACK PINE	7100	1/28	44	10.7	3.1	9.4
BLACK PINE PILLW	7100	1/28	SP	12.2	5.6	10.7
BLUDDY RICK PILLW	7600	2/01	SP	11.6	5.5	-
BLUDDY LAKE	5900	2/03	82	20.5A	8.5	18.3
BOULDER MOUNTAIN PILLW	7950	2/01	SP	15.4	5.7	-
BOX CANYON PILLW	6670	2/01	SP	5.8	4.5	-
BRIDGES HOLE	7250	1/27	56	17.1	8.4	20.0
BRIDGES HOLE PILLW	7250	1/27	SP	15.5	9.2	18.9
CALVERT CREEK PILLW	6450	2/01	SP	7.7	3.4	7.7
CARROT HASIN	9000	1/25	85	28.0	14.1	26.7
CARROT HASIN PILLW	9000	1/25	SP	19.4	10.9	19.7
CASHE CREEK PILLW	7800	2/01	SP	7.0	2.8	-
CHESSMAN RESERVOIR	6200	1/24	13	2.9	0.3	2.8
CHECKER CREEK	4060	1/26	47	11.1	7.6	-
CLOVER MEADOW PILLW	8600	2/01	SP	13.0	8.2	-
COLE CREEK	7850	1/28	33	8.8	6.5	12.5
COLE CREEK PILLW	7850	1/28	SP	8.0	5.6	12.3
COMBINATION	5600	1/28	22	4.8	0.1	4.4
COMBINATION PILLW	5600	1/28	SP	4.9	0.6	4.4
COPPER BOTTOM PILLW	5200	2/01	SP	10.8	3.8	10.5
COPPER CAMP PILLW	6950	2/01	SP	27.0	13.6	30.0
COPPER MOUNTAIN	7700	1/30	36	8.6	4.9	8.0
COYOTE HILL	4200	1/27	39	8.6	3.2	8.1
CRYSTAL LAKE PILLW	6100	2/01	SP	8.5	7.1	-
DAISY PEAK	7600	1/28	38	8.2	4.4	-
DAILY CREEK	5780	1/29	41	10.6	4.5	8.5
DAILY CREEK PILLW	5780	2/01	SP	9.2	7.6	-
DARKHORSE LAKE PILLW	8700	2/01	SP	22.0	11.0	9.0
DEADMAN CREEK	6450	1/27	36	8.6	4.0	8.2
DEADMAN CREEK PILLW	6450	1/27	SP	7.7	3.1	8.2
DEBERT MOUNTAIN	5600	2/03	42	10.9	7.9	11.6
DEVIL'S SLIDE	8100	1/26	54	15.4	6.6	15.6
DISCOVERY BASIN	7050	1/28	41	3.8	4.4	8.1
DIVIDE PILLW	7900	2/01	SP	9.5	4.2	7.7
DIX HILL	6400	1/30	37	9.8	5.6	8.2
ELK PEAK	8000	2/01	31	7.6	-	-
EMERY CREEK	4350	2/03	48	12.4	8.0	11.9
EMERY CREEK PILLW	4350	2/03	SP	12.3	8.2	-
FISH CREEK	8060	1/28	37	9.6	4.0	-

SNOW FEBRUARY 1982

DRAINAGE BASIN AND/OR SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Year Observed	Water Content (Percent)	Year Observed	Water Content (Percent)
FISHER CREEK	9100	2/01	651	22.5	16.0	28.0
FISHER CREEK PILLW	9100	2/01	SP	20.8	15.1	26.6
FLATIRON MOUNTAIN PILLW	6700	2/01	SP	30.4	26.4	35.2
FLECCER RIDGE	7500	1/29	39	9.4	-	8.3
FOURTH OF JULY	3450	1/23	34	7.4	2.8	-
FRIDAY HILL	4620	1/28	55	14.8	9.1	-
FRUITION MEADOWS	6480	1/28	24	5.5	0.5	6.2
FRUITION MEADOWS PILLW	6480	1/28	SP	5.9	3.0	6.5
GARVER CREEK	4250	1/25	33	8.2	6.6	9.1
GARVER CREEK PILLW	4250	1/25	SP	7.0	7.5	8.1
GARDONS PASS	7100	1/27	74	23.4	11.2	16.7
GRAVE CREEK	4300	1/25	41	11.0	6.3	13.7
GRAVE CREEK PILLW	4300	1/25	SP	11.7	7.0	13.5
GRIZZLY PEAK	8640	1/28	30	7.6	5.5	10.9
HAWKINS LAKE	6450	1/25	59	18.8	17.1	23.0
HAWKINS LAKE PILLW	6450	1/25	SP	16.7	16.0	22.1
HEARTY LAKE TRAIL	4830	1/27	68	16.3	4.0	12.8
HEUGEV DAM	6550	1/27	40	9.6	5.2	8.9
HELL ROADING DIVIDE	5770	1/30	64	17.3	14.0	23.3
HERRIS JUNCTION	4850	1/26	67	18.5	13.7	-
HOLBROOK	4530	2/03	50	11.0A	1.5	7.7
HOOD MEADOW	6600	1/26	27	7.0	1.8	8.1
HOODS BASIN	4010	1/27	120	37.2	20.4	36.3
HOODS BASIN PILLW	4000	2/01	SP	32.4	17.0	34.6
HOODS CREEK	5920	1/27	114	33.0	16.6	32.5
INTERLAKES	6450	1/29	27	5.8	3.0	6.2
JOHNSON PARK	6450	1/28	27	5.0	1.5	-
KINGS HILL	7500	1/27	42	10.6	6.4	10.8
KIWANIS CAMP	3720	1/27	14	2.1	0.6	1.3
KRAVE CREEK PILLW	4750	2/01	SP	11.7	3.6	-
LAKEVIEW CANYON	6950	1/29	26	5.9	4.7	9.1
LAKEVIEW RIDGE	7400	1/27	25	5.4	4.4	8.3
LENNIE RIDGE PILLW	4130	2/01	SP	6.5	3.1	7.0
LENNIE RIDGE PILLW	4130	2/01	SP	6.5	3.1	7.0
LICK CREEK	6860	1/26	29	6.9	1.4	7.1
LICK CREEK PILLW	6860	1/26	SP	6.3	4.8	6.4
LOUFR LAKE PILLW	7930	2/01	SP	15.0	10.4	-
LUBWECHE FLUME	4300	2/01	32	5.5	0.2	4.5
LUBWECHE FLUME PILLW	4300	2/01	SP	6.2	0.2	4.5
LUBWECHE FOREST # 3	5450	2/02	35	7.6	0.6	5.9
LUBWECHE FOREST # 4	4650	2/02	24	4.4	0.3	3.1
LUBWECHE FOREST # 6	4040	2/02	28	5.4	0.3	3.5
LUBWECHE HYDROPLANT	4200	2/01	32	5.5	0.7	5.8
MADISON PLATEAU	7750	1/23	59	17.1	6.8	15.5
MADISON PLATEAU PILLW	7750	1/26	SP	13.2	10.0	16.0
MARY GLACIER	4960	1/31	58	15.9	10.5	-
MARY GLACIER PILLW	4960	1/31	SP	14.2	9.0	-
MARIAS PASS	5250	1/30	54	15.3	6.2	12.0
MAYNARD CREEK	4210	1/27	34	8.9	3.0	10.0
MAYNARD CREEK PILLW	4210	1/27	SP	7.3	5.1	8.3
MOHAWK PEAK PILLW	8300	2/01	SP	16.5	8.6	-
MOULDER RESERVOIR	6850	1/29	28	5.9	2.2	-
MOUNT LOCKHART	4700	2/01	EST	15.5	7.0	16.0
MOUNT LOCKHART PILLW	4700	2/01	SP	14.0	7.5	14.0
NEVADA CREEK PILLW	6490	2/01	SP	10.9	5.1	-

Columbia River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD			
	FORECAST		PAST RECORD		FORECAST		PAST RECORD	
	THOUSAND ACRE FEET	PERCENT OF AVERAGE	THOUSAND ACRE FEET	PERCENT OF AVERAGE	THOUSAND ACRE FEET	PERCENT OF AVERAGE	THOUSAND ACRE FEET	PERCENT OF AVERAGE
	APRIL - SEPTEMBER				APRIL - JULY			
KOOTENAI RIVER below Libby Dam (1)	7,030	97	6,726	7,246	5,993	97	5,516	6,178
FISHER RIVER near Libby	242	90		270	227	90		253
YAKA RIVER near Troy	484	90		537	462	90		514
KOOTENAI RIVER at Leona (1)	8,610	96	7,941	8,883	7,495	97	6,601	7,727
INFLOW HOULTON RESERVOIR at BUTTE (Million Gallons)					276	97	378	286
WARM SPRINGS CREEK at MEYERS DAM near Anaconda (2)	55.3	109		50.7	45.1	109		41.2
FLINT CREEK near Southern Cross (3)	18.5	100	23.8	18.5	15.5	101	20.3	15.4
FLINT CREEK below Boulder Creek (4)	77.0	99		77.6	60.8	99		61.3
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	17.9	106		16.9	16.9	106		16.0
MIDDLE FORK ROCK CREEK near Philipsburg	90.8	115		78.8	82.0	115		71.1
NEVADA CREEK near Finn	21.2	90		23.6	19.8	91		21.8
BLACKFOOT RIVER near Bonner	935	92		1,017	845	92		920
CLARK FORK RIVER above Milltown (6)	790	94		843	685	94		730
CLARK FORK RIVER above Missoula	1,725	93	1,530	1,859	1,530	93	1,359	1,651
WEST FORK BITTERROOT RIVER near Connor (7)	220	118		187	205	119		172
BITTERROOT RIVER near Darby	715	119	445	602	660	120	401	552
SKALKAGU CREEK near Hamilton	65.0	113		57.4	57.0	114		49.8
BURNT FORK CREEK near Stevensville (8)	42.5	110		38.8	37.3	110		33.6
BITTERROOT RIVER at Missoula (9)	1,730	112		1,543	1,595	113		1,416
CLARK FORK RIVER below Missoula	3,455	101		3,405	3,125	102		3,069
CLARK FORK RIVER at St. Regis	4,566	101	3,586	4,521	4,080	100	3,240	4,078
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,770	90		1,969	1,600	90		1,782
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,810	95	1,504	1,911	1,670	95	1,385	1,750
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	2,140	93	1,815	2,302	2,000	93	1,714	2,159
FLATHEAD RIVER at Columbia Falls (10)	5,900	93	5,061	6,330	5,400	93	4,664	5,827
SWAN RIVER near Big Fork	630	93		681	555	93		596
FLATHEAD RIVER near Polson (11)	6,900	93	6,097	7,394	6,360	93	5,622	6,806
CLARK FORK RIVER near Plains (11)	12,100	98	10,071	12,340	11,000	98	9,190	11,222
THOMPSON RIVER near Thompson Falls	244	93		263	217	93		234
PROSPECT CREEK at Thompson Falls	135	94		143	125	94		133
CLARK FORK RIVER at Whitehorse Rapids (12)	13,500	98		13,781	12,270	98		12,519
								10,420
								10,633

- (1) Adjusted for storage in Lake Kootenai.
- (2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
- (3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
- (4) Sum Flint Creek at Havville and Boulder Creek at Havville.
- (5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
- (6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

- (7) Adjusted for storage in Painted Rocks Reservoir.
- (8) Adjusted for diversion into Sunset Bighline Canal.
- (9) Difference in observed flow Clark Fork above and below Missoula.
- (10) Adjusted for storage in Hungry Horse Reservoir.
- (11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- (12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

Below average

runoff forecast

Most drainages are forecast to have near to a little below average runoff this spring and summer. The exceptions are the Bitterroot River drainage and the nearby Rock Creek drainage where above average runoff is expected to be produced by the good snowpack in this area.

The high elevation snow is also expected to produce good streamflow during the main irrigation season. Irrigation reservoir storage is a little below average but all should fill with spring runoff.

CANADA



Snowpack varies

throughout drainage

Variable storm patterns across western Montana have created different snowpack conditions.

The Bitterroot River drainage and the adjacent areas east of the Bitterroot have above average water stored in the snowpack.

The northwest corner of the state has below average snow even though January snowfall was above average in almost all areas.

Most of the Flathead and Lower Clark Fork Rivers, the Blackfoot River, and upper portions of the Clark Fork River drainages have near average snowpack in their headwater areas.

Valley snowpaks have continued to accumulate because of frequent snowfall and very little melting during this past month.

Soils beneath the snow are generally drier than normal in nearly all watersheds.

SUMMARY of SNOW MEASUREMENTS

RIVER BASIN and/or SUBWATERSHED	Number of Gauging Stations	THIS YEAR'S SNOW WATER EQUIVALENT	
		LAST YEAR	AVERAGE
East Kootenay/RC.	22	107	94
Kootenai/Montana	13	117	80
Kootenai above Bonners Ferry...	35	111	88
Little Bitterroot	9	116	78
N. Fk. Flathead...	6	158	99
M. Fk. Flathead...	7	153	102
S. Fk. Flathead...	3	124	96
Swan	25	135	91
Flathead	1	123	74
Stillwater & Whitefish...	24	204	100
Clark Fork above Blackfoot	15	262	107
Blackfoot	39	228	103
Upper Clark Fork above Missoula	11	239	122
Bitterroot	12	182	95
Lower Clark Fork below Missoula	62	214	105
Clark Fork (Total w/o Flathead)...	87	174	97
Pend O'Reille (Clark Fork & Flathead)	122	163	99
Columbia (Pend O'Reille & Kootenai)			

Yellowstone River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD			
	FORECAST		PAST RECORD		FORECAST		PAST RECORD	
	THOUSAND ACRE FEET	PERCENT OF AVERAGE	THOUSAND ACRE FEET	PERCENT OF AVERAGE	THOUSAND ACRE FEET	PERCENT OF AVERAGE	THOUSAND ACRE FEET	PERCENT OF AVERAGE
	APRIL - SEPTEMBER				APRIL - JULY			
YELLOWSTONE RIVER at Corwin Springs	2060	98	1703	2,102	1720	98	1466	1,749
YELLOWSTONE RIVER near Livingston	2340	95		2,471	1940	95		2,048
BOULDER RIVER at Big Timber	398	96		416	365	96		382
STILLWATER near Absarokee (1)	575	87		660	485	87		555
CLARK'S FORK RIVER near Belfry	628	98		644	555	98		564
ROCK CREEK near Red Lodge	113	96	123	118	88.0	96	98.6	91.4
INFLOW COONEY RESERVOIR near Royd (2)	49.0	76		64.5	40.0	76		52.5
YELLOWSTONE RIVER at Billings	4455	95	3998	4,682	3780	95	3628	3,979
BIGHORN RIVER near St. Xavier (3)	2170	104	1331	2,034	1930	104	1328	1,861
LITTLE BIGHORN RIVER near Hardin	182	93		196	160	93		174
YELLOWSTONE RIVER at Miles City (4)	6863	96		7,142	6000	96		6,243
YELLOWSTONE RIVER near Sidney (5)	7523	96		7,806	6550	96		6,805

- (1) Adjusted for storage in Mystic Lake.
- (2) Adjusted for storage in Cooney Reservoir.
- (3) Adjusted for storage in Buffalo Bill, Boyeen, Bull Lake, Pilot Butte and Bighorn Reservoirs.
- (4) Adjusted for storage in Bull Lake, Buffalo Bill, Boyeen, Pilot Butte, Bighorn and Tongue River Reservoirs.
- (5) Adjusted for reservoir shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

Average streamflows

forecast now

Streamflows during the spring and summer months are forecast to be near average on most streams and rivers.

The inflow to Yellowstone Lake is forecast to be above average. This will help provide good late season flows on the Yellowstone River.

Below average runoff is expected in portions of the Stillwater River and Red Lodge Creek.

WATER SUPPLY OUTLOOK

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Yellowstone at Livingston	Exc	Avg
Shields	Avg	Fair
Boulder	Avg	Avg
Sweetgrass - Big Timber	Avg	Fair
Stillwater	Avg	Fair
Rock Creek	Avg	Fair
Clark's Fork	Avg	Avg
Yellowstone above Bighorn	Avg	Avg
Bighorn	Avg	Fair
Little Bighorn	Avg	Fair
Tongue	Avg	Fair
Powder	Avg	Avg
Lower Yellowstone	Avg	Avg

Snowpack varies

throughout drainage

The snowpack varies over the Yellowstone River drainage with the better conditions in the southern headwaters, decreasing downstream and to the northeast.

Around Red Lodge, the amount of water stored in the snowpack is near 70 percent of average, while in the Yellowstone River headwaters above Yellowstone Lake, it is about 130 percent of average.

The snowpack in the north end of the Big Horn Mountains is well below average, increasing to near average in the Powder River headwater area. The Big Horn River basin has an above average snowpack.

This season, there has been considerable snow transported by the wind in the more open and exposed areas.

Mountain soils under the snow are generally drier than normal.

SUMMARY of SNOW MEASUREMENTS

RIVER BASIN and/or SUBWATERSHED	Number of Gauging Stations	THIS YEAR'S SNOW WATER EQUIVALENT	
		LAST YEAR	AVERAGE
Upper Yellowstone ab Livingston	13	201	96
Shields	4	189	84
Boulder & Stillwater	1	207	73
Rock Creek & Clark's Fork	10	166	83
Yellowstone (nb Bighorn River)	28	186	89
Bighorn/Wyoming	27	193	111
Little Bighorn	4	186	76
Bighorn (Total)	31	193	106
Tongue	10	161	78
Powder	7	188	98
Yellowstone (Total)	76	186	94

Mountains "shiver" too!

We all know how cold it can get in town at night, but how about in the mountains? Because cold air flows downslope and temperature inversions often occur in valleys, it can be warmer in the mountains than it is in town.

Most Montanans experienced their coldest night this winter on February 4-5, 1982. SNOTEL reports indicate that the same was true in the mountains.

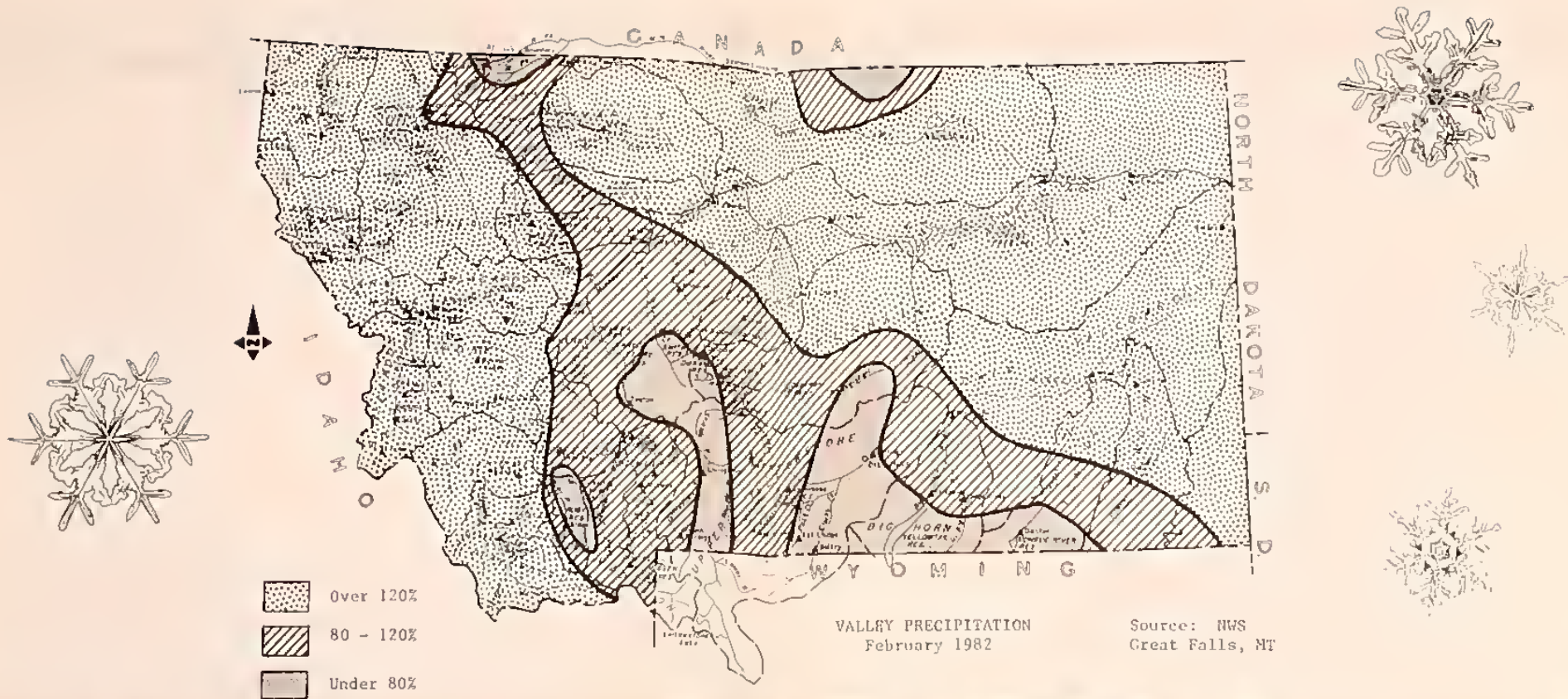
The extensive cold air system that covered nearly all of the state sent temperatures at most SNOTEL sites to their lowest points this winter.

Three of the coldest locations were at Calvert Creek in the Big Hole drainage (-45°F), at Dendman Creek near White Sulphur Springs (-47°F), and at Northeast Entrance to Yellowstone National Park (-47°F).

A -58°F reading was recorded at Whiskey Creek near West Yellowstone. Sensors on SNOTEL can only measure temperatures down to -58°F, so it is highly likely that the actual minimum was even lower than that.

Weather Outlook for February

The National Weather Service in Great Falls is expecting February to have below normal temperatures and near normal precipitation over most of Montana.



RESERVOIR STORAGE (Thousand Acre Feet)		END OF MONTH	January			Average based on 1963-77 period.		
Basin or System	RESERVOIR	Usable Capacity	Usable Storage					
			This Year	Last Year	Average			
COLUMBIA								
Kootenai	Kootenai	5,748.2	2,717.0	2,858.0	---			
Flathead	Hungry Horse	3,451.0	2,381.0	2,829.0	2,341.0			
	Flathead Lake	1,791.0	887.0	1,185.0	1,253.0			
	Camas (4)	45.2	20.0	23.2	20.7			
	Mission Valley (8)	100.3	22.4	34.7	37.0			
Clark Fork	Georgetown Lake	31.0	29.8	29.6	27.3			
	Lower Willow Creek	4.9	1.2	2.3	1.6			
	Nevada Creek	12.6	---	5.1	5.8			
	Noxon Rapids	334.6	320.1	318.6	315.2			
Bitterroot	Painted Rocks	31.7	---	---	17.6			
	Como	34.9	7.8	24.1	11.3			
MISSOURI								
Beaverhead	Lima	84.0	25.6	48.3	39.5			
	Clark Canyon	257.2	158.5	161.9	135.9			
Ruby	Ruby	38.8	---	---	24.3			
Madison	Hebgen Lake	377.5	274.6	276.4	241.5			
	Ennis Lake	41.0	31.4	29.9	35.3			
Gallatin	Middle Creek	8.0	3.5	3.8	3.3			
Missouri	Canyon Ferry	2,043.0	1,590.0	1,717.0	1,661.0			
	Hauser & Helena	61.9	61.9	63.0	60.2			
	Lake Helena	10.4	10.4	10.9	9.9			
	Holter Lake	81.9	81.4	81.9	70.8			
	Fort Peck Lake	18,910.0	14,180.0	15,140.0	15,570.0			
	Smith River	10.6	6.0	5.6	6.7			
Musselshell	Newlan Creek	12.4	10.3	9.7	---			
	Bair	7.0	2.8	3.5	4.4			
	Martinsdale	23.1	10.8	10.6	9.9			
	Deadman's Basin	72.2	---	---	46.8			
Sun	Gibson	99.1	44.5	56.8	41.4			
	Willow Creek	32.2	22.8	19.2	21.2			
Marias	Pishkun	32.0	19.8	19.4	16.5			
	Lower Two Medicine	11.9	---	---	6.2			
	Four Horns	19.2	---	---	13.2			
	Swift	30.0	7.6	18.9	14.3			
Milk	Lake Frances	111.9	77.8	79.6	70.9			
	Elwell (Tiber)	1,347.0	505.7	538.5	540.8			
	Beaver Creek	3.5	0.8	1.4	1.5			
	Fresno	127.2	32.2	38.7	65.4			
	Nelson	66.8	28.8	22.2	43.3			
HUDSON 8AY								
St. Mary's	Lake Sherburne	64.3	14.6	35.8	20.1			
YELLOWSTONE								
Stillwater	Nystic Lake	21.0	6.1	6.0	10.0			
Clark's Fork	Cooney	27.4	---	14.6	14.6			
Tongue	Tongue River	68.0	18.1	---	32.5			
Bighorn	Bighorn Lake	1,356.0	882.5	907.5	536.0			

SATELLITE SNOW COVER



MISSOURI RIVER BASIN Above Canyon Ferry Dam

DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 8, 1981	9.5	8535
November 19, 1981	53	6530
November 26, 1981	100	3800
November 29, 1981	100	3800
December 7, 1981	71	5770
December 17, 1981	100	3800
December 20, 1981	91	4680
December 29, 1981	95	4380
January 6, 1982	96	4300
January 10, 1982	91	4680
January 17, 1982	100	3800
February 3, 1982	100	3800

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES

Canada

Department of the Environment
Atmospheric Environment Service
Water Management Service
British Columbia Ministry of Environment
Inventory and Engineering Branch, Hydrology Section
Alberta Environment
Technical Services Division

Federal

Department of the Army - Corps of Engineers
Department of Agriculture - Forest Service
Department of Commerce - Soil Conservation Service
Department of Commerce - National Environmental Satellite Service
Department of Commerce - National Weather Service
Department of Interior - Bureau of Indian Affairs
Department of Interior - Fish and Wildlife Service
Department of Interior - Geological Survey
Department of Interior - National Park Service
Department of Interior - Bureau of Reclamation
Department of Energy - Bonneville Power Administration

STATE AGENCIES

Montana Conservation Districts
Montana Department of Fish, Wildlife and Parks
Montana Department of Natural Resources and Conservation
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

PRIVATE ORGANIZATIONS

The Anaconda Company
Big Sky of Montana
Butte Water Company
Flathead Valley Community College
Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.